



Lake Havasu City Fire Department
Fire Prevention Bureau
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FD Specification #05 2012 IFC, Ch. 5, Appx B & C, NFPA 24 Rev. 8/24/2016
Water Systems, Fire Hydrant Installations, Maintenance & Testing Standards Page 1 of 5

SCOPE

This specification outlines the requirements for:

- a. Installing private fire protection water supplies and systems.
- b. Maintaining and testing private fire hydrants.
- c. Calculating minimum fire flow requirements for buildings.
- d. Determining proper fire hydrant locations and distribution.
- e. Complying with local conditions.

PURPOSE

To provide standards for installing, maintaining and testing required on-site water supplies including fire service mains and fire hydrants, and to ensure that fire flow requirements for buildings are met or exceeded as approved by the City and the Fire Marshal (FM).

DEFINITIONS

- 1. Approved hydrant:** Any hydrant approved by the City meeting AWWA Standard C-502 and must be Mueller Centurion, Clow Medallion, East Jordan (EJ) 5CD250, American AVK Series 2700, Waterous Pacer or any other hydrant approved by the City prior to installation.
- 2. Control valve:** Appliance used to interrupt the flow of water to individual hydrants or properties.
- 3. Fire-flow:** The flow rate of a water supply, measured at 20 pounds per square inch (psi) residual pressure that is available for firefighting.
- 4. Hydrant (Fire):** An exterior valved connection to a water supply system that provides hose connections for firefighting purposes.
- 5. Municipal fire hydrant:** A valved connection on a water supply system having one or more outlets and that is used to supply hose and fire department pumpers with water on public property.
- 6. On-site:** Means to be done, or located at the site, as a particular activity located on private property.
- 7. Private fire hydrant:** A valved connection, on a water supply system, having one or more outlets used to supply hose and fire department pumpers with water on private property.
- 8. Required water supply:** An *approved* water supply consisting of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems, capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within Lake Havasu City.

REFERENCES

- 2012 International Fire Code (IFC) § 507 *Fire Protection Water Supplies*
http://premiumaccess.iccsafe.org/document/code/332/5438869?code_id=5438869
- 2012 IFC Appendix B *Fire-Flow Requirements for Buildings*
<http://premiumaccess.iccsafe.org/document/code/332/5453142>
- 2012 IFC Appendix C *Fire Hydrant Locations and Distribution*
http://premiumaccess.iccsafe.org/document/code/332/5453356?code_id=5453356
- NFPA 24 *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*
LHC Community Investment Department, Engineering Division Specification for Water Piping Systems § 02550
<http://www.lhcaz.gov/docs/default-source/engineering-specifications/section02550.pdf?sfvrsn=6>

Note: This FD Specification is intended to be a guide only. For full installation, fire-flow, location and distribution and maintenance requirements, refer to the references above. Where conflicts exist between this document and the applicable codes and standards, the above references must supersede.

INSTALLATION REQUIREMENTS

Required water supplies, hydrants and other appurtenances must be installed on-site and in accordance with NFPA 24, IFC § 507, IFC Appendix C and LHC Water Piping Systems § 02550.

PLANS AND PERMIT

- 1. Plans and specifications** must be submitted to the Community Investment Department and Fire Department for review and final approval prior to any water supply installation.
- 2. Plan Submittal – Required On-site Water Supply**
Three (3) sets of Architectural or Civil Engineer stamped and scaled plans are required with the following information:
 - a. Location, size of pipe, type of material of the proposed supply line.
 - b. All control valves, sectional valves, post indicators, backflow preventers, or fire hydrants if required.
 - c. Bury depth of three feet (3') minimum with type of bed and cover.
 - d. Fire flow analysis at city connection. This evaluation may be obtained through the Community Investment Department, Engineering Division by calling 453-6336, Monday - Friday.
- 3. Required Inspections:**
 - a. Piping, bed and cover with tracer tape on all plastic systems.
 - b. 200 psi test for **2 hours**.
 - c. Underground flush of the system.
 - d. Chlorination of all domestic/fire lines by the engineer of record.
- 4. FD Permit:** An authorized fire department construction permit is required for the installation or modification of private fire hydrants.

FIRE FLOW REQUIREMENTS

Fire flow requirements for buildings must meet or exceed the requirements in IFC *Appendix B*.

ON-SITE FIRE HYDRANT INSPECTION, TESTING AND MAINTENANCE REQUIREMENTS

Fire hydrants and fire service mains installed or located on private property must meet the requirements of NFPA 25 *Inspection, Testing and Maintenance of Water-Based Fire Protection*, Chapter 7 *Private Fire Service Mains*, which establishes minimum requirements for the inspection, testing and maintenance of private fire service mains, hydrants and their appurtenances.

Private fire hydrants are required to be inspected annually and after each use, and flow tested and maintained annually by qualified personnel acceptable to the FM. Private fire hydrants must be distinguished from municipal hydrants by painting and maintaining them red in color using Rust-Oleum **V7400 Alkyd Enamel, Fire Hydrant Red** or equivalent and approved by the FM.

Fire hydrants must be inspected and maintained in an operative condition at all times and be repaired where defective. Additions, repairs, alterations, and servicing must be in accordance with approved codes and standards.

- 1. Inspection and testing.** The FM requires periodic inspection and testing for fire hydrant systems and fire-protection/fire-extinguishing systems and appliances.
 - 2.** Reports of inspections and tests must be maintained on the premises and copies sent to the Fire Prevention Bureau via *The Compliance Engine*.
 - 3. Systems out of service.** The FM must be notified when any required fire-protection system is out of service and upon restoration of service. A *Fire Watch* may be required. See: "*SYSTEMS OUT OF SERVICE 'FIRE WATCH' REQUIREMENTS*" below.
 - 4. Fire hydrants and fire appliances.** Fire hydrants and fire appliances required to be installed or maintained must not be removed, tampered with, or otherwise disturbed except for the purpose of extinguishing fire, training, recharging, or making necessary repairs, or when allowed by the FM.
 - 5. Tampering and obstructing.**
 - a. Apparatus, equipment and appurtenances belonging to, or under the supervision and control of, the fire department must not be altered, damaged, or otherwise disturbed unless expressly authorized by the FM.
 - b. Posts, fences, vehicles, growth, trash, storage, and other materials or objects must not be placed or kept within thirty-six inches (36") of fire hydrants, fire department inlet connections or fire-protection system control valves, in a manner that would prevent such equipment from being immediately discernible. The fire department must not be deterred or hindered from gaining immediate access to fire-protection equipment or hydrants.
 - c. Fire hydrants must be accessible to fire department apparatus by fire access roads and fire lanes. See also, FD Specification #01 Marking of Fire Lanes.
 - 6. Protection, marking, and obstruction of hydrants.**
 - a. Fire hydrants subject to possible vehicular damage must be adequately protected. **See *Vehicle Impact Protection* statement below.**
 - 7. Identification and marking of hydrants.**
 - a. Fire-protection equipment and fire hydrants must be clearly identified in an approved manner to prevent obstruction by parking and other physical obstructions.
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- b. When required by the FM, hydrant locations must be identified by the installation of reflective markers.
 - 8. Clear space around hydrants.** A three-foot (3') clear space must be maintained around the circumference of fire hydrants except as otherwise required or approved.
 - 9. Minimum ground clearance for hydrant operation.** The minimum clearance between the ground around the fire hydrant and the bottom of the lowest discharge orifice protective cap is 18-inches.
 - 10. Testing requirements:**
 - a. **Water supply test:** The FM must be notified prior to the water supply test. Water supply tests must be witnessed by the FM or *approved* documentation of the test must be provided to the FM prior to final approval of the water supply system. Contact the LHC water department by calling (928) 855-2116.
 - b. **Fire hydrant testing procedure:**
 - 1. Loosen all caps, and then tighten them.
 - 2. Fully open and then close the hydrant **(WITH CAPS ON)**.
 - 3. Remove one (1) 2-1/2" cap.
 - 4. Open hydrant until water flows out to about **one foot** from the base of hydrant.
- Note:** Do not open hydrant all the way, this can create problems in the City water system by stirring up the main.
- 5. Sustain flow for approximately **60 seconds**, and then close the valve.
- Note:** If water appears black, you may let it run until the water runs clear.
- 6. Ensure that the hydrant drains down.
 - 7. When complete, leave hydrant caps snugged just a bit tighter than hand tight.
 - 8. Record results and send a copy to the FM.

VEHICLE IMPACT PROTECTION FOR FIRE HYDRANTS & EXPOSED CONTROL VALVES

1. Requirements:

See IFC Ch. 3, § 312 Vehicle Impact Protection:

<http://premiumaccess.iccsafe.org/document/code/332/5438391>

- a. **Vehicle impact protection** guard posts (bollards) must be provided by guard posts or other approved physical barriers, that comply with the specifications below and be approved by the FM, where required.
- b. **Guard posts** must comply with all of the following requirements:
 - 1. Constructed of steel not less than **4 inches in diameter** and concrete filled.
 - 2. Spaced not more than **4 feet between posts** on center.
 - 3. Set not less than **3 feet deep** in a concrete footing of not less than a 15-inch diameter.
 - 4. Set with the top of the posts not less than **3 feet above ground**.
 - 5. Located not less than **3 feet from the protected object**.
- c. **Other approved physical barriers** must be a minimum of 36 inches in height and must resist a force of 12,000 pounds applied 36 inches above the adjacent ground surface.

SYSTEMS OUT OF SERVICE 'FIRE WATCH' REQUIREMENTS

IFC Ch. 9, § 901.7 *Systems out of Service*

<http://premiumaccess.iccsafe.org/document/code/332/5439785>

Where a required *fire protection system* is out of service, the fire department and the *FM* must be notified immediately and, where required by the *FM*, the building must either be evacuated or an *approved* fire watch must be provided for all occupants left unprotected by the shutdown until the *fire protection system* has been returned to service. Contact the Fire Prevention Bureau for requirements.



APPROVED: _____ DATE: July 20, 2016
Scott Hartman, Fire Marshal